



Environmental Statement Chapter 21. Cultural Heritage: Terrestrial Archaeology and Historic Landscape

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21.0 Cultural Heritage: Terrestrial Archaeology and Historic Landscape

21.1 Introduction

- 21.1.0.1 This Chapter provides an assessment of the potential effects of the Project on cultural heritage: terrestrial archaeology and historic landscape. The following sections: detail the legislation and planning policy context relevant for cultural heritage; the methodology by which this assessment has been carried out; provide a baseline description of the cultural heritage of the area; and offer an assessment of the potential effects that could arise from the construction, operation and decommissioning phases of the Project. This document should be considered in conjunction with the Baseline for Terrestrial Archaeology contained within Appendix 21.1, Volume 3.

21.2 Legislative and planning policy context

- 21.2.0.1 The primary guidance/policy on archaeology for Wales is contained in Welsh Office Circular 60/96 Planning and the Historic Environment: Archaeology (WO, 60/96). Development proposals that potentially affect designated assets and their setting are protected through implementation of the Ancient Monument and Archaeological Areas Act 1979. The Ancient Monument and Archaeological Areas Act 1979 sets out a presumption in favour of preservation in-situ concerning sites and monuments of national importance (scheduled). Planning Policy Wales (Welsh Government, 2012) defines a presumption in favour of preservation in-situ of all types of archaeological sites and monuments. Planning Policy Wales is supplemented by a series of technical advice notes (TANs) and, together with the Welsh Office Circulars, comprise the National Planning Policy. Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990 details the need to preserve individual buildings of special architectural or historic interest, which have been given special protection. The Planning (Listed Buildings and Conservation Areas) Act 1990 is supplemented by guidance in Welsh Office Circulars 61/96 and 1/98.
- 21.2.0.2 Planning in Wales is currently overseen by the Assembly Minister for Sustainability and Rural Development through the Planning Division of the Welsh Government.
- 21.2.0.3 The primary planning legislation in Wales is the Town and Country Planning Act 1990, the Planning & Compulsory Purchase Act 2004 and the Planning (Listed Buildings and Conservation Areas) Act 1990. However, the Welsh Assembly has produced Planning Policy Wales (Edition 5 November 2012) to provide advice on all aspects of planning policy in Wales. Detailed advice on archaeology in the planning process is contained in Welsh Office Circular 60/96 Planning and the Historic Environment: Archaeology (WO 61/96). The issuing of this advice in December 1996 cancelled Welsh Office Planning Policy Guidance Note 16 Archaeology and Planning (December 1991).
- 21.2.0.4 Welsh Office Circular 61/96 Planning and the Historic Environment: Historic Buildings and Conservation Areas presents the Welsh Government's advice on the handling of historic buildings and landscapes in the planning process. It should be noted that an equivalent document to the English PPG15 was never issued in Wales.
- 21.2.0.5 A Register of Landscapes of Outstanding Historic Importance was issued in 1998 (Cadw 1998) A further Register of Landscapes of Special Historic Interest was issued in 2001

(Cadw 2001). Many current structure and local plans, including Unitary Development Plans and the emerging Local Development Plans, include measures to protect them. The Welsh Government has provided some advice on these landscapes in Welsh Office Circular 60/91. In addition, the Welsh Government, through Cadw, and Countryside Council for Wales (now comprised in Natural Resources Wales), have issued a second edition of the “Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and development Processes” (2007) which provides advice on the processes required to produce an Assessment of the Significance on the Impact of Development on Historic Landscape (ASIDOHL2).

- 21.2.0.6 It is expected that developments which will have a significant effect on a registered historic landscape will require an ASIDOHL to be prepared for them. Following an initial assessment of the potential impacts of the Project, consultation was undertaken with Gwent and Glamorgan Archaeological Trust (GGAT), which has confirmed that there will be no impact from the Project on any historic landscapes. Accordingly, historic landscapes are not considered further in this Chapter.
- 21.2.0.7 A Register of Historic Parks and Gardens in Wales was compiled by Cadw and ICOMOS in 2001 (Cadw 2001).

21.2.1 Regional and local planning guidance

Neath Port Talbot County Borough Council (NPTCBC) Unitary Development Plan

- 21.2.1.1 In the context of regional and local policy guidance, the following summarises relevant policies from the adopted NPTCBC Unitary Development Plan (UDP) (2008). The UDP currently provides the framework for the consideration of development proposals affecting archaeological and cultural heritage features.
- 21.2.1.2 The Project elements located within the NPTCBC area do not include any proposals for the alteration, extension or re-use of a listed building or its curtilage and will therefore not adversely affect the special architectural or historic character of any listed building. No conservation areas will be affected.

Policy ENV22 Archaeological Remains

- 21.2.1.3 Any proposal that would damage or destroy a site of archaeological interest and its setting will be required to demonstrate that the need for the development clearly outweighs the value of the archaeological site. Where the site is of national importance the proposal will be required to demonstrate, in addition, that there is no feasible alternative. Where sites of archaeological interest are of national importance, whether they are scheduled or not, there will be a presumption that they should be preserved in situ.

Policy ENV23 Archaeological Evaluation

- 21.2.1.4 Where important archaeological remains may exist within the site of a proposal, or their setting might be affected, the developer may be required to undertake an archaeological evaluation to clarify the position.

Policy ENV24 Archaeological Recording

- 21.2.1.5 Before consent is granted for a proposal which would result in damage to or the destruction of important archaeological remains, the local planning authority will need to

be satisfied that the developer has made appropriate provisions for the archaeological investigation and subsequent recording of the remains and the publication of the results. Further, the developer will need to demonstrate before any works are commenced which would affect the remains, that there is a reasonable level of certainty that the proposal will take place within a specified time scale.

City and County of Swansea Council UDP

- 21.2.1.6 The City and County of Swansea UDP, adopted in 2008, forms the basis for decisions on land use planning affecting the City & County of Swansea for the period until 2016. Policy EV6 Ancient Monuments & Protection of Archaeological Sites, Policy EV9 Conservation Areas and Policy EV11 Historic Parks, Gardens and Landscapes are relevant. There are no proposals within the Project that will directly affect any buildings listed in accordance with Policies EV7 Extensions/Alterations to Listed Buildings or EV 8 Demolition of Listed Buildings.

Policy EV6 Ancient Monuments and Protection of Archaeological Sites

- 21.2.1.7 The Council will seek to protect, preserve and enhance Scheduled Ancient Monuments and their settings, and also unscheduled archaeological sites and monuments and their settings listed in the County Sites and Monuments Record held by the Glamorgan Gwent Archaeological Trust's Curatorial Division. Where proposals affect sites and areas of archaeological potential, applicants will be required to provide the following information with planning applications:
- a. An assessment or evaluation of the archaeological or historic importance of the site or structure;
 - b. The likely impact of development on the archaeological site; and
 - c. The measures proposed to preserve, enhance and record features of archaeological interest.

Policy EV9 Conservation Areas

- 21.2.1.8 Development within or adjacent to a conservation area will be permitted only if it would preserve or enhance the character or appearance of the conservation area or its setting. New development in such locations must also be of a high standard of design, respond to the area's special characteristics, and pay particular regard to:
- i. Important views, vistas, street scenes, roofscapes, trees, open spaces, and other features that contribute to the character or appearance of the conservation area;
 - ii. The retention of historically significant boundaries or other elements that contribute to the established pattern of development;
 - iii. The relationship to existing buildings and spaces, and pattern of development,
 - iv. Scale, height and massing;
 - v. Architectural design, established detailing, and the use of materials;
 - vi. Boundary treatment; and
 - vii. Public realm materials.

Policy EV11

- 21.2.1.9 Development that would harm the character or setting of registered Historic Parks and Gardens or the character of Historic Landscapes will not be permitted.

21.3 Assessment methodology and significance criteria

- 21.3.0.1 To inform the preparation of this Chapter, an archaeological desk-based assessment, supported by a site walkover assessment, was undertaken in January 2013 (see Appendix 21.1, Volume 3). A 1km radius around the site boundary including the cable route, known as the Inner Study Area, was used to determine the archaeological and historical baseline, as set out in the scoping report (TLSB, 2012). A wider study area of 5km extending from the boundaries of the Project at the western end (Queens Dock) and on the landward side of the route of the cable trench to the east, was also developed to assess all statutorily protected historical structures. The desk-based assessment also included an assessment of archaeological investigations undertaken within 1km of the Project boundaries (the Inner Study Area). Discussions were held with, and the desk-based assessment methodology agreed by, GGAT.
- 21.3.0.2 The desk-based report (presented in Appendix 21.1, Volume 3) was prepared in line with the Institute for Archaeologists Standard and Guidance for archaeological desk-based assessment (IFA 1994, Revised September 2001, October 2008 and November 2012) (IFA, 2012). This states that the purpose of a desk-based assessment is to gain information about the known or potential archaeological resource within a given area or site (including the presence or absence, character and extent, date, integrity, state of preservation and relative quality of the potential archaeological resource), in order to make an assessment of its merit in context, leading to one or more of the following:
- i. The formulation of a strategy to ensure the recording, preservation or management of the resource;
 - ii. The formulation of a strategy for further investigation, whether or not intrusive, where the character and value of the resource is not sufficiently defined to permit a mitigation strategy or other response to be devised; and
 - iii. The formulation of a proposal for further archaeological investigation within a programme of research.
- 21.3.0.3 The following sources were consulted during the preparation of the archaeological desk-based assessment:
- a) Historic Environment Record (HER) held by GGAT;
 - b) Royal Commission on the Ancient and Historic Monuments of Wales (RCAHMW);
 - c) West Glamorgan Archive Service;
 - d) Cadw's list of Registered Historic Landscapes; and
 - e) Cadw's list of Historic Parks and Gardens
- 21.3.0.4 West Glamorgan Historic Environment Record (HER) provided a list of all records of assets within the 1km radius of the site boundary i.e. the Inner Study Area in order that any assets of relevance to the assessment were identified. Data on designated assets were also gathered for a larger outer study area that extended up to 5km from the Project and the Project ZTV which extended to 15km from the site boundary was also

considered. This ensured that the value of all heritage assets was properly understood within their local, regional and national context.

- 21.3.0.5 Cartographic evidence provides information on sites of potential archaeological significance, along with historic land-use development. The assessment incorporates published and unpublished material and charts historic land-use through a map regression exercise. Cartographic evidence from 18th, 19th and 20th centuries was reviewed.
- 21.3.0.6 A visual inspection of the land to be occupied by the Project was undertaken in January 2013. The purpose of the inspection was to ascertain whether any archaeological sites not previously recorded were visible as earthworks or extant features, as well as to assess the impact of recent land-use on any potential archaeological deposits. A photographic record was also made at this time.
- 21.3.0.7 This ES proceeds on the basis of the outline construction programme as discussed in Chapter 4, Section 4.5.2, which anticipates construction starting in 2015 and with the main construction lasting for about three years. The assessments contained in this chapter are not materially sensitive to works commencing within the anticipated validity of the DCO, which is five years, or to an extension of (say) a further year-or-so.

21.3.1 Significance criteria

- 21.3.1.1 The methods for assessing the potential effects of the Project on the heritage resource conform to the regulatory framework as set out in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (2009 No. 2263) and the Marine Works (Environmental Impact Assessment) Regulations 2007. The assessment takes into account the significance (importance) of each asset, and the likely impact (without mitigation) of the Project upon them, in order to appraise the potential effects of the Project. For the purposes of this assessment, significance is defined as the value of the heritage asset arising from heritage interest which may be archaeological, architectural, artistic, or historic. Significance can also be derived from an asset's setting. Taking these criteria into account, each identified heritage asset can be assigned a level of significance in accordance with a five-point scale (see Table 21.1).

Table 21.1 Criteria for establishing the significance (heritage value) of heritage assets

Significance/ heritage value	Asset Categories
High	Remains of inscribed international importance, such as World Heritage Sites Grade I and Grade II* Listed Buildings Grade I and Grade II* Registered Parks and Gardens Scheduled Monuments Undesignated archaeological assets of schedulable quality and importance Buildings, sites and areas that can be shown to have particularly important qualities in their fabric or historical association.
Moderate	Grade II listed Buildings Conservation Areas Grade II Registered Parks Undesignated buildings, monuments or sites that are of special interest and can be shown to have qualities in their fabric or historical association of regional or county importance.

Significance/ heritage value	Asset Categories
Low	Structures of local historic and/ or architectural interest Parks and gardens of some local interest Undesignated buildings, monuments or sites of local importance or of modest quality including those historic townscapes with historic integrity Assets that are damaged so that too little remains to justify inclusion into a higher grade
Not significant	Assets identified as being of no archaeological, architectural, artistic, or historic value Assets whose values are compromised by poor preservation or survival or of contextual associations to justify inclusion into a higher grade
Uncertain	Buildings, sites, monuments or areas of identified archaeological potential not yet investigated

21.3.1.2 The assessment of impact includes the consideration of an asset's setting, whether designated or not. The setting of a heritage asset varies from case to case and cannot be generically defined. Setting contributes to the significance of an asset, and should not be considered separate from it. English Heritage guidance (EH 2012), which is helpful in understanding the concept, and hence of relevance to the Project even though it is in Wales, is that an assessment of the impact of a proposed development should identify whether the development would be acceptable in terms of the degree of harm to an asset's setting. This can be identified by using a broad five-step approach that (1) identifies which assets and settings are affected; (2) how and to what degree these settings make a contribution to the significance of the heritage asset; (3) assesses the effects of the proposed development; (4) explores ways to minimise harm and maximise enhancement; and (5) documents the decision made and monitors outcomes. Fundamental to the assessment of impacts on setting is the principle that a visual relationship may contribute to setting, but does not define it.

21.3.1.3 The magnitude of an impact can be judged on a five-point scale (see Table 21.2). The impact score is arrived at without reference to the importance of the asset and the impact is assessed without taking into account any subsequent mitigation proposals.

Table 21.2 Criteria for establishing the magnitude of impact on a cultural heritage asset

Impact Rating	Description of Impact
High	Change such that the significance of the asset is totally altered or destroyed. Comprehensive change to setting affecting significance, resulting in changes in our ability to understand and appreciate the resource and its historical context and setting.
Medium	Change such that the significance of the asset is affected. Changes such that the setting of the asset is noticeably different, affecting significance resulting in changes in our ability to understand and appreciate the resource and its historical context and setting.
Low	Change such that the significance of the asset is slightly affected. Changes to the setting that have a slight impact on significance resulting in changes in our ability to understand and appreciate the resource and its historical context and setting.
Minimal	Changes to the asset that hardly affect significance. Changes to the setting of an asset that have little effect on significance and no real change in our ability to understand and appreciate the resource and its historical context and setting.
No change	The development does not affect the significance of the asset. Changes to the setting do not affect the significance of the asset or our appreciation of it.

21.3.1.4 Only those heritage assets (including their settings) on which there is a potential for impact have been included within the impact assessment. Assessment of the significance

of effect takes into consideration any design mitigation or additional mitigation proposed during development, for example planting, noise barriers etc. It should be recognised that mitigation measures, for example landscaping or areas of ecological compensation, can themselves be a source of impact.

- 21.3.1.5 The assessment of the level of overall significance of the effect taking into consideration mitigation is arrived at by cross-referencing between the significance (value) of the asset (Table 21.1) and the magnitude of impact (Table 21.2) as shown in Table 21.3. The assessment of the overall significance of effect of the scheme on each identified heritage asset can be Negligible, or varying degrees of Adverse or Beneficial. Effects are only considered to be significant if they are major or moderate.

Table 21.3 Matrix for establishing overall significance of effect

Significance value of asset /	Magnitude of impact				
	No Change	Minimal	Low	Medium	High
High	Negligible	Minor	Moderate	Major	Major
Moderate	Negligible	Minor	Minor	Moderate	Major
Low	Negligible	Negligible	Minor	Minor	Moderate
Not Significant	Negligible	Negligible	Negligible	Minor	Minor
Uncertain	Determinable only on definition of the asset				

- 21.3.1.6 This chapter reports on the significance of effects and does not make a judgement on whether 'substantial' or 'less than substantial' harm will be caused. The judgement of whether an impact causes 'substantial' harm is based on whether the impact on the individual asset has an impact on the wider historic environment, where the significance of an asset is such that its loss would be detrimental to the understanding of the unique values of the wider asset type. This may include extensive physical damage to an asset or loss of critical elements of an asset's setting. The identification of 'substantial' harm is therefore one of professional judgment and not directly equitable to the significance of the effect.

21.4 Baseline conditions

- 21.4.0.1 The terrestrial archaeology Inner Study Area incorporates land at Queens Dock, Swansea and extends east either side of the route of the proposed cable trench to a terminus at National Grid's substation in Baglan Bay Energy Park. There are currently two main options under consideration for the cable route. For both routes, the cable's landfall will commence at the western landfall of the lagoon seawall. The cable will run within Swansea Port to reach the new Swansea University Bay Campus (SUBC) adjacent to Crymlyn Burrows. The cable route will then either follow existing port roads or the boundary of the SUBC. The cable will then either be laid in the verge/cycle path alongside Fabian Way or would go along a path running through Crymlyn Burrows Site of Special Scientific Interest (SSSI). From either of these two options, the cable then diverges to follow a tarmac track across the eastern end of Crymlyn Burrows. The cable crosses the River Neath to the south of a former crossing at Briton Ferry either within existing ducts or by directional drilling, continuing along the east of the river, across Baglan Burrows to connect with a sub-station at Baglan Power Station. Further details on the Project and cable route options can be found in Chapter 4: Project Description.

21.4.1 Geology and topography

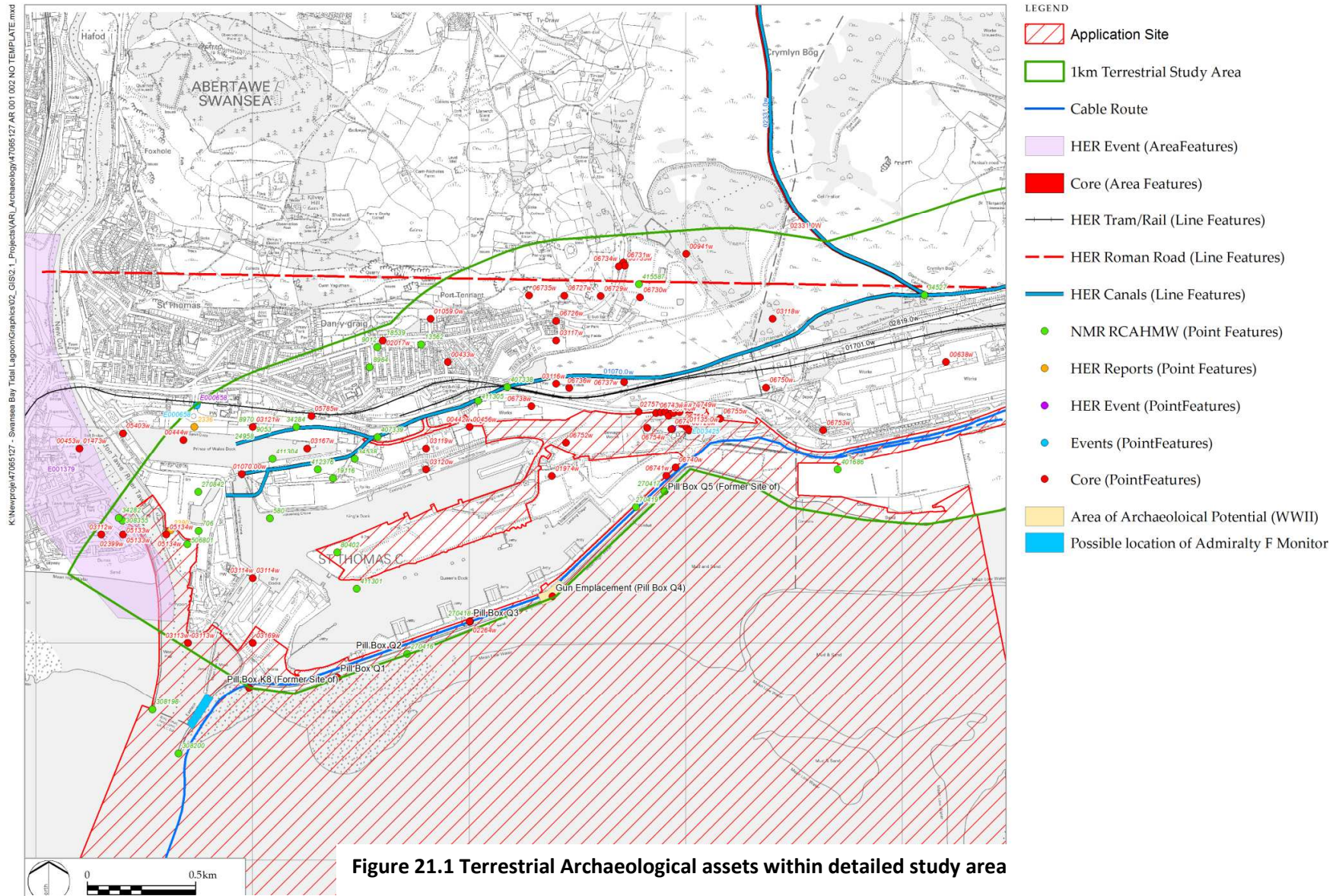
- 21.4.1.1 The solid geology of the Swansea area comprises Carboniferous Coal Measures. The tertiary soils over the majority of the study area are predominantly wind blown sand and marine beach deposits. Some of these may also contain peat. As identified in the Chapter 20: Cultural Heritage: Marine Archeology, much of the cable corridor is located within the “recently” reclaimed marine foreshore environment. This is because, prior to the construction of the Victorian training seawall along the River Neath to the south west, the area was probably below the shoreline on tidal sandy flats.
- 21.4.1.2 A programme of trial pitting and borehole investigation was undertaken in February 2006 by URS Corporation Ltd (URS, 2006) in relation to the former operational petroleum plant to the east of Queens Dock. The results indicate that the top two metres of immediate ground underfoot throughout the former operational petroleum tank farm comprise made ground of sand and gravels. Out of the 80 trial pits excavated only 1 pit contained a single 10cm-thick lens of peat mixed with sand and shells which is likely to have been re-deposited material.

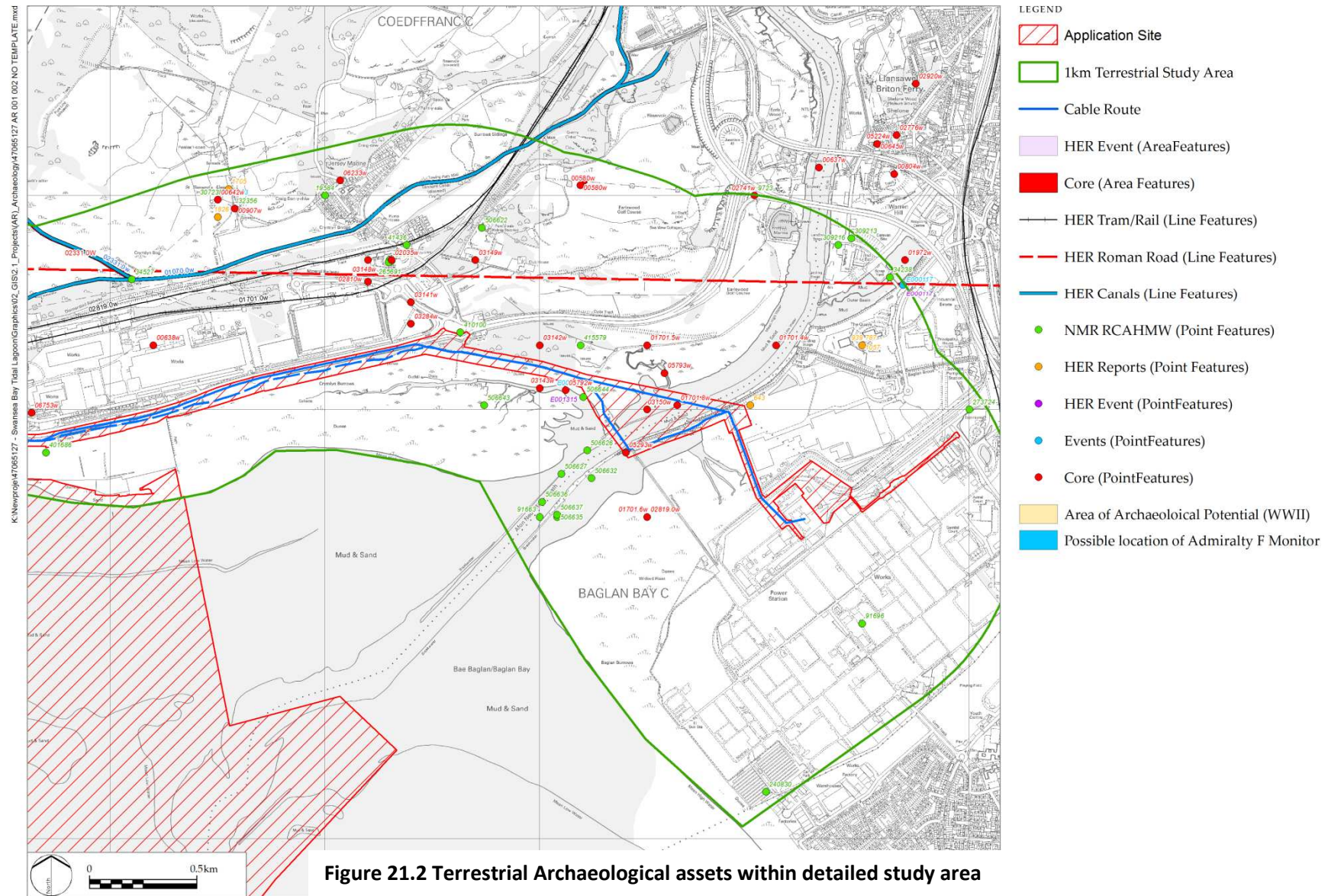
21.4.2 Previous archaeological investigations

- 21.4.2.1 There has been no archaeological fieldwork within or adjacent to the area of the Project. A geophysical survey and evaluation has been carried out at St Margaret’s Chapel, Llandarcy approximately 900m north of the Project, and an evaluation has also been undertaken on the Crymlyn Burrows Intertidal Wreck. Several archaeological assessment works have taken place within 1km and these are discussed in the Desk Based Assessment (Appendix 21.1, Volume 3).

21.4.3 Cultural heritage assets

- 21.4.3.1 Examination of data archives in the Historic Environment Record (HER), the RCAHMW, and other published sources indicates that there is a number of records for the site of the Project itself and a large number within a 1km radius, as described in Table 21.4 and shown on Figure 21.1 and 21.2 (shown below and as A3 in Volume 2). The 1km Inner Study Area is shown by a green line on these figures.
- 21.4.3.2 Initial discussions with GGAT addressed the potential for any surviving, deeply-buried remains that have been recorded at similar coastal sites in the area. It also identified the need to assess the potential impact of the Project upon the cultural setting of the area in and around its location. There are no SAMs or listed buildings within the land on which the Project will be constructed or its immediate surrounding area, and it does not lie within, or immediately adjacent to a Registered Historic Landscape or conservation area.





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Table 21.4 Summary of key cultural heritage assets within 1km and their significance

ID	Name	Period (designated*)	Significance\ Value
00453w*	SWANSEA FERRY	Medieval	Low
00456w	FINDSPOT	Bronze Age	Low
00637w* 34238	BRITON FERRY SITE	Medieval (Scheduled Monument)	High
00638w	FINDSPOT PALSTAVE	Bronze Age	Low
00642w 307238	ST MARGARETS CHAPEL	Medieval (Scheduled Monument)	High
00645w*	CHURCH OF THE HOLY VIRGIN AT BRITON FERRY	Medieval (Grade II Listed Building)	Moderate
00804w*	WARREN HILLFORT	Iron Age	Moderate
00907w 32356	ST MARGARETS WELL	Medieval (Scheduled Monument)	High
00941w	DAN Y BEACON	Post-medieval	Low
01027.0w	NEATH CANA	Post-Medieval	Low
01059.0w	GREEN LANE (Trackway)	Post-Medieval	Low
01070.00w	TENNANT CANAL (LINEAR FEATURE)	Post-Medieval	Low
01070.02w	RED JACKET PILL RIVER BARGE LOCK, LLANDARCY, TENNANT CANAL	Post-Medieval	Low
01070.08w	CANAL SLUICE, TENNANT CANAL	Post-Medieval	Low
01070.12w	TENNANT CANAL PUMP HOUSE	Post medieval	Low
01135.0w	CLAWDD Y SAESON	Post medieval	Low
01699.0w	SWANSEA VALLEY RAILWAY	Post-Medieval	Low
01701.4w	NEATH RAILWAY TUNNEL	Post-Medieval	Low
01701.5w	RAILWAY CUTTING	Post-Medieval	Low
01701.6w	PORT TALBOT BRANCH LINE	Post-Medieval	Low
01701.8w	RAILWAY TUNNEL	Post-Medieval	Low
01848w	QUARRY	Post-Medieval	Low
01972w*	BRITON FERRY DOCK	Post-Medieval (Scheduled Monument/ Grade II* Listed Building)	High
01974w	LAMBERTS COTTAGESPORT TENNANT COPPER	Post-Medieval	Low
02017w	DAN Y GRAIG	Post-Medieval	Low
02023/4w*	FULLING MILL (SITE)	Medieval	Low
02035w 23082	JERSEY MARINE TOWER	Post-medieval (Grade II Listed Building)	Moderate
02264w	QUEENS DOCK (PILL BOX)	Modern	Low
02331.0w	GLANYWERN CANAL	Post-medieval	Low
02399w 34282	PILOT HOUSE	Post- Medieval (Grade II Listed Building)	Moderate
02639w	GELLI BWCH	Post- Medieval	Low
02640w	PANT Y SAIS	Post- Medieval	Low
02757w	PILL BOX	Modern	Low
02776w*	MOUNT VERNON EARTHWORK	Medieval	Low
02810w	HANDBALL COURT	Post- Medieval (Grade II Listed Building)	Moderate
02819.0w	VALE OF NEATH RAILWAY - SWANSEA NEATH EXTENSION	Post-Medieval	Low
02920w*	BRITON FERRY (SITE OF?)	Medieval	Low
02923w	FINDSPOT COINS	Roman	Low
03109.0w	SWANSEA DOCK	Modern	Low
03113w*	WEST PIER	Post- Medieval	Low
03114w*	EAST PIER	Post- Medieval	Low
03116w	CROWN WORKS PAINT FACTORY	Post- Medieval	Low
03117w	CANAL BASIN	Post- Medieval	Low
03118w	BURROWS CHEMICAL WORKS	Post- Medieval	Low

ID	Name	Period (designated*)	Significance\ Value
03119w	ARSENIC WORKS	Post- Medieval	Low
03120w	GROYNES	Post- Medieval	Low
03121w	SALT WORKS	Post- Medieval	Low
03141w	ANTI-AIRCRAFT BATTERY	Modern	Low
03142w	ANTI-AIRCRAFT BATTERY	Modern	Low
03143w	PIPELINE	Modern	Low
03148w	8 BURROWS LODGE (house)	Post- Medieval	Low
03149w	CRYMLYN BURROWS COLLIERY	Post- Medieval	Low
03150w	BREAKWATER	Post- Medieval	Low
03167w	FINDSPOT COIN	Roman	Low
03169w	FINDSPOT COIN	Roman?	Low
03284w	JERSEY MARINE HAA BATTERY	Modern	Low
03581w	IRON WORKS	Post- Medieval	Low
03583w	CANAL BRIDGE	Post- Medieval	Low
03600w	HOUSE	Post- Medieval	Low
03601w	LANDING STAGE	Post- Medieval	Low
03607w	HOUSE	Post- Medieval	Low
04582w	HOUSE PLATFORM	Post- Medieval	Low
05133w*	WEST PIER, SWANSEA HARBOUR LIGHTS	Post- Medieval	Moderate
05134w*	EAST PIER, SWANSEA HARBOUR LIGHTS	Post- Medieval	Moderate
05224w*	BRITON FERRY CHURCHYARD	Medieval	Low
05293w	RIVER NEATH	NA	Moderate
05403w*	WAREHOUSE	Post- Medieval	Low
05785w	WALL OF PRINCE OF WALES DOCK	Post- Medieval	Moderate
05792w	PILL		Low
06233w	GRAIG DEW LIMEKILN	Post- Medieval	Low
06726w	GELLI GRAFOG BUILDING	Post- Medieval	Low
06727w	GRAVEL PIT	Post- Medieval	Low
06728w	QUARRY	Post- Medieval	Low
06729w	QUARRY	Post- Medieval	Low
06730w	COAL LEVEL	Post- Medieval	Low
06731w	TIR JOHN NORTH BUILDING	Post- Medieval	Low
06733w	WELL	Post- Medieval	Low
06734w	COAL DRIFT	Post- Medieval	Low
06735w	QUARRY	Post- Medieval	Low
06736w	SWANSEA WAGON WORKS	Post- Medieval	Low
06737w	GAS WORKS	Post- Medieval	Low
06738w	SPELTER WORKS	Post- Medieval	Low
580	DOCKS	Post medieval	Low
706	GREAT EASTERN PIER	Post medieval	Low
8964	CHAPEL	Post medieval	Low
8969	CRAIG	Post medieval	Low
8970	HEN GAPEL	Post Medieval	Low
9012	CHAPEL	Post Medieval	Low
9723	HALL	Post Medieval	Low
13562	CHURCH	Post Medieval	Low
18539	DAN Y CRAIG	Post Medieval	Low
19116	COTTAGES	Post Medieval	Low
19584	PANT Y SAIS	Post medieval	Low
23082	JERSEY MARINE TOWER	Post medieval	Low
24958	NEW MILL	Post medieval	Low
34284	BOLLARD	Post Medieval	Low
34527	TENNANT CANAL JUNCTION	Post Medieval	Low
34538	LENGTHMANS HOUSE	Post medieval	Low
41436	STATION	Post Medieval	Low

ID	Name	Period (designated*)	Significance\ Value
80402	FUEL WORKS	Post Medieval	Low
91663	NEATH NAVIGATION	Modern	Low
91696	BP CHEMICALS	Post Medieval	Low
265691	JERSEY MARINE HOTEL	Post Medieval	Low
270416	PILLBOX	Modern	High
270417	PILLBOX	Modern	High
270418	PILLBOX	Modern	High
270419	TANK CUBES x 4	Modern	High
270842	OBSERVATION POST	Modern	Low
273724	SOUTHPORT	Post medieval	Low
308198	HARBOUR LIGHT WEST PIER	Modern	Low
308200	HARBOUR LIGHT EAST PIER	Modern	Low
308355	WATCH HOUSE	Post medieval	Low
309213	IRONWORKS	Post medieval	Low
309216	TINPLATE WORKS	Post medieval	Low
401686	STORAGE DRUMS	Modern	Low
403571	PORT TENNANT DOCK	Modern	Low
407338	BRIDGE	Post medieval	Low
407339	TENNANT CANAL	Post medieval	Low
411301	TENNANT LOCK	Post medieval	Low
411304	TENNANT LOCK	Post medieval	Low
411305	BRIDGE	Post medieval	Low
412376	CHAPEL	Medieval	Low
415579	JERSEY MARINE AIRFIELD	Modern	Low
506622	CRYMLIN BURROWS COLLIERY	Post medieval	Low
506626	RIVER NEATH BOUY	Modern	Low
506627	RIVER NEATH BOUY	Modern	Low
506632	RIVER WALL LIGHT	Modern	Low
506635	NAVIGATION AID	Modern	Low
506636	NAVIGATION AID	Modern	Low
506637	NAVIGATION AID	Modern	Low
506643	NAVIGATION AID	Modern	Low
506644	FISH TRAP	Modern	Low
410100	FABIAN WAY	Modern	Low
NA	GUN EMPLACEMENT Q4	Modern	High
NA	PILL BOX Q5 (site of)	Modern	High
NA	F MONITOR (site of)	Modern	High
NA	PILL BOX K8 (site of)	Modern	High

Sites highlighted in yellow in this table are known sites with the potential to be directly impacted by the Project

21.4.4 Prehistoric period (500,000BC – AD43)

21.4.4.1 In the early Prehistoric period (late Mesolithic/early Neolithic), the Project and surrounding area comprised land around the mouth of the River Neath, with the then coastal shoreline having lain several kilometres further to the north east than the present day. The terrain was likely to have been predominantly a wetland environment situated along the course of the River Neath, with mud flats, potentially containing areas of fresh and salt water, onto which sand dunes later formed. The environment would have created peats with the potential for the preservation of archaeologically significant organic material, such as wood and possibly archaeological features, which would not usually survive. Should peat have been present within the Crymlyn Burrows area of the Project, there would be the potential for significant archaeological remains, such as trackways, dugout canoes (although see Chapter 20 on Marine Archaeology in respect of the relative paucity of such resource in the UK) and other wooden or associated artefacts. However, given the very limited impact of the Project in this location, it is

highly unlikely that such deposits, if present, would be disturbed by ground works in any event.

21.4.5 Roman (AD43 – 410)

- 21.4.5.1 There is little evidence of Roman archaeological remains within or close to the site of the Project. However, located just outside the 1km Inner Study Area, a group of Roman coins dating to the early 4th century was found in Castle Street, Swansea and a Roman cooking pot was discovered in the alluvium at the edge of the North Dock. Seven further coins were found on the foreshore where the Prince of Wales Dock now stands and more possible Roman coins, a 3rd century hoard of 7 brass coins, were located to the south.

21.4.6 Early medieval (410 – 1066)

- 21.4.6.1 There are no records of early medieval date within the assessed dataset for the Inner Study Area. However, it is very likely that the foreshore areas of the site (see Chapter 20 Cultural Heritage: Marine Archaeology) and the mouths of both Rivers Neath and Tawe were intensively utilised during this period. It is generally thought that the origin of the name 'Swansea' derives from the Scandinavian name 'Sveinn', and 'ey' which describes an island or inlet. Therefore, it is likely that Swansea originated as an Anglo-Scandinavian trading port, probably in the 9th and 10th centuries. Trading activity is likely to have been focused around the mouth of the River Tawe with initial settlement originating nearby. However, there is little direct archaeological evidence for this, with so far only one find comprising a Norse ring-pin of 9th century date.

21.4.7 Medieval (1066 – 1485)

- 21.4.7.1 Swansea's role as an important trading centre commenced in earnest in the medieval period, as a result of an increase in port trade. The port was also a centre of ship building, which is also likely to have contributed significantly to the economy of the medieval town; there are charter records of charges made for using timber from the Lordship of Gower's wood. The port traded notably in wine, and merchants contributed significantly to the town's growth. Evidence suggests that pottery from Bristol and iron from Chepstow were traded, along with fish from Iceland, as well as wine and salt from the southwest of France. Records of exports in corn, wool, coal and lime are also known.
- 21.4.7.2 Located approximately 300m to the north of the Inner Study Area, situated approximately 750m to the northwest of the Project at the present town centre, is Swansea Castle founded in 1106. Other medieval records refer to a quay and ferry, the latter probably being located outside the South Gate of the castle (Howell and Dunning 2004). During the later medieval period, Swansea saw a decline in trade and the population fell as a result of major plagues in the 14th and 15th centuries. It is estimated that up to half of the population of Swansea was lost to the plague.
- 21.4.7.3 It is possible that the current Fabian Way follows the approximate line of a medieval route extending from the ferry crossing at Briton Ferry to the medieval city of Swansea. Just outside the eastern end of the Inner Study Area, to the north-east, is the potential site of a medieval motte and bailey castle at Briton Ferry.

21.4.8 Post-medieval (1485 – 1901)

21.4.8.1 Following the decline of Swansea in the later medieval period as a result of plagues, the town began to recover during the post-medieval period, not least due to the increased use of the port. It was during the post-medieval period that the region became an important industrial centre and was soon established as a major copper-smelting centre. In addition to copper, there were also zinc spelter, steel, iron and tin plate works thriving in Swansea. The docks played a significant role in the rapidly growing industries in Swansea. The Dock at Briton Ferry, designed by Brunel and built in 1858, is a Grade II* listed building and scheduled monument.

21.4.8.2 During the 19th century, the expansion of the port continued with the alteration of the course of the River Tawe by the creation of New Cut in 1845. Around this time, new quays and docks were built on the west bank of the River Tawe. The North and South Docks were constructed in 1852 and 1859 respectively. By 1900, the docks had shifted to the east side of the River Tawe as the demand for mooring space had expanded.

21.4.9 Modern (1914 – Present)

21.4.9.1 The area that would be affected by the western end of Onshore Works (Queens Dock) was not developed until the 20th century. Prior to this, it was located below the high-water mark and was therefore subjected to the tides. The first large dock on the east side of the river was the Prince of Wales Dock, which opened in 1881 and was extended in 1898. This was followed by the King's Dock, which opened in 1909. With the Kings Dock in operation, the exportation of coal, coke and patent fuel quickly grew, reaching a record level of 5.5 million tons in 1913. Tinplate exports reached their peak in 1924, when 621,000 tons were shipped through the port. However, with a change in industrial energy resources from coal to oil in the early 20th century, the UK's first oil refinery, the Llandarcy Refinery at nearby Skewen, was completed in 1918. Oil traffic peaked in the 1950s at around eight million tons per annum, but declined rapidly when, in 1961, a pipeline connection between Llandarcy Refinery and the new Angle Bay oil terminal at Milford Haven was opened.

21.4.9.2 Queens Dock (c.1920) is within the 1km Inner Study Area but is not itself recorded in the HER as an historic environment asset.

21.4.9.3 In the early part of World War II, five pill boxes and a gun emplacement were built into the sea wall at Queens Dock. Three of the pill boxes survive, the demolished remains of another is present and the location of the fifth pill box is represented by an area of repair in the sea wall. Four tank cubes also survive at the eastern end of Queens Dock. Further to the east, records held at the West Glamorgan Archives and a study of aerial photographs suggest that the land east of Crymlyn Burrows and west of Jersey Marine Golf Club was also occupied by the British military during WWII.

21.4.10 Built heritage baseline

21.4.10.1 There are three Grade II listed buildings located within 1km of the application site. There are three Grade I Listed Buildings and 19 Grade II* Listed buildings within 5km of the application site.

Listed buildings within the study area

- 21.4.10.2 At the eastern end of the cable route is Jersey Marine Tower, a Grade II listed building, built as part of the development of Jersey Marine as a holiday resort. To the north of Queens Dock is a post-medieval Pilot House, also listed at Grade II. This is now surrounded by mostly modern residential development. The final listed building is the remains of a Grade II listed post-medieval handball court (built 1862), located towards the northern limits of the central part of the inner study area.
- 21.4.10.3 Also within the 1km Inner Study Area, in the northern part of the central section, is the Chapel of St Margaret's Grange which is a scheduled monument.

Undesignated historic buildings

- 21.4.10.4 Queens Dock is not a designated structure but is of historical significance as a consequence of its association with the earlier docks to the north. Queens Dock represents the last phase of dock construction and was principally built to serve the import of fuel stores. The dock retains many of its original features, including some of the jetties and dockside furniture such as bollards and rope stays. The most significant built elements at Queens Dock relate to military defensive structures of WWII date.
- 21.4.10.5 During the early part of WWII, five pill boxes were constructed into the sea wall to defend the harbour and docks against any sea borne attacks. A gun emplacement was also built to accommodate a 4.7" naval gun originally of late 19th century date. The platform for the gun still survives in the sea wall, along with three of the original five pill boxes. It is possible that the gun emplacement would have had a crew shelter and magazine store and possibly other elements associated with it (*Jon Berry, Cadw, pers comm*). Towards the eastern end of the seawall at Queens Dock, there are two *in situ* tank cubes and a further two close by that are no longer *in situ*. The pill boxes are all constructed of brick with concrete foundations and thick rendering. All the surviving structures of WWII date are in good condition, although significant structural cracks are present across the roofs of two of the pill boxes. The westernmost pill box (K8) no longer exists, but its former location is represented by an area of repair in the sea wall. The easternmost pill box has been demolished and the debris of the structure is still present (Q5). A further defensive measure was located on the existing eastern breakwater. This was an Admiralty 'F' station which consisted of a monitor structure designed to pump ignited fuel onto the water surface between the dock entrance. The monitor was connected to a pipe and fuel store located at some distance to the west, possibly also along the sea wall (*Jon Berry, Cadw, pers comm*).
- 21.4.10.6 The WWII structures mentioned are shown on a Great Western Railway plan of the docks dating to late 1930s, but adopted and amended by the military to show strategic locations of defensive measures for the docks. Due to copyright, the plan is not reproduced here but the location of the WWII structures has been extrapolated from this plan and are illustrated on Figure 1 (Appendix 21.1, Volume 3).
- 21.4.10.7 Although not currently statutorily protected, all the WWII defence structures are of high historic significance. A site visit (10.09.13) undertaken by Jon Berry of Cadw and Andy Mayes of URS has revealed evidence that the pill boxes are unique in their design and, as such, are likely to be of at least national significance. Together with the gun emplacement and tank cubes, the surviving pill boxes form a distinctive group of structural remains which represent a rare survival in Wales. As such, it is understood that

Cadw will be applying for scheduling of the WWII structures in the near future, to ensure their long term protection.

21.4.11 Zone of Theoretical Visibility

- 21.4.11.1 Appendix 21.1 (Volume 3) details the findings of the baseline study for a 15km zone of theoretical visibility ("ZTV"). This identified a number of scheduled monuments within Swansea and its environs, including Oystermouth Castle (GM007, 94508); Kenfig Castle (GM042, 300455); Margam Radar Station (GM488, 308125); and Myydd March Hywel East II (GM326, 15387). The impact upon the historic setting of the designated assets within the ZTV was assessed by visiting the sites to make a visual inspection or by reviewing view point photographs. Consultation with Cadw was also undertaken. It was determined in agreement with Cadw that there would be no significant impact upon the designated assets assessed.

21.4.12 Potential for archaeological and palaeoenvironmental remains

- 21.4.12.1 The majority of the Project is located within modern made ground. However, the desk-based assessment (see Appendix 21.1, Volume 3) identified the potential for the presence of deeply buried archaeological and palaeoenvironmental remains, dating to the Prehistoric period, within the Crymlyn Burrows area. Following a review of the borehole and trial pit logs from previous geotechnical work that has been undertaken on the application site (URS, 2006), it is considered likely that any type of deposits where archaeological remains have potentially survived are likely to be below the impact level of the proposed cable connection trench.
- 21.4.12.2 A low potential for remains of all other periods is identified, derived from the modern situation of the western part of Project, and the route of the cable route that is in either modern made ground or within the intertidal zone of the estuary within these periods. This position would have made it unfavourable for settlement, and whilst exploitation activity relating to the resources offered within the intertidal zone is known throughout these periods, there is an absence of any such known recorded activity both within the Project and the surrounding area.
- 21.4.12.3 An area of archaeological potential for remains of WWII date is located close to the gun emplacement (Q4) in the sea wall.

21.5 Potential impacts and mitigation measures

- 21.5.0.1 This section considers the potential impact of the onshore aspects of the Project on archaeological resources during the construction, operational and decommissioning phases.

21.5.1 Construction phase

- 21.5.1.1 The construction phase will comprise the construction of onshore infrastructure within Swansea Port, the removal of the eastern breakwater and removal of sections of the existing seawall other than those relevant to the scheduling criteria (TBA) located either side of the WWII structures and the laying of the cable to the National Grid substation at Baglan.

Onshore Infrastructure, Removal of Eastern Breakwater and Partial Removal of Seawall

- 21.5.1.2 There are very few below ground archaeological remains, or deposits with the potential for such receptors, within the footprint of the onshore infrastructure works. As such, the historic value of the area for these aspects is identified as low, with the magnitude of impact of the Project considered to be low to minimal, as identified in Table 21.5.
- 21.5.1.3 Removal of the eastern breakwater will result in the loss of the harbour light located at the end of the east pier (308200). The light (SS 667 915) was established in 1909. The structure consists of a 7.0m (23ft) high wooden framework tower supporting a small lantern. The light is considered to be of low historic value. The magnitude of impact of the loss of this structure is considered to be major. A level 2 building recording exercise on the light is proposed in order to mitigate its loss, resulting in a moderate residual impact. It is also recommended that the structure be retained intact, if possible and practical, with a view to relocation at a later date. If this option, which will be considered during the detailed design stage, is implemented, then the residual effect would be reduced to **minor**.
- 21.5.1.4 Remains relating to the operation of the WWII gun emplacement (Figure 21.1 site Q4, Volume 2) (such as a magazine store or crew shelter) located in the existing eastern sea wall may be present below ground. Further to a site inspection by Cadw, it is understood that an application to schedule the gun emplacement, pill boxes and tank cubes that survive along the existing sea wall is expected to be undertaken in the near future. The value of these sites is considered to be high.
- 21.5.1.5 It is proposed that the three pill boxes which remain *in situ* and the gun emplacement within the existing eastern seawall will be retained as part of the Project. A buffer zone of seawall around each of the structures will be included as part of the proposed scheduling of each structure. The buffer zone is expected to be 3m on either side of each structure. The tank cubes and collapsed pill box located at the eastern end of the seawall may remain *in situ* or be relocated as part of the Project. It is possible, that any below ground structures associated with the gun emplacement may be disturbed during construction operations. The magnitude of impact associated with the WWII structures is considered to be low. Cadw has advised that it does not consider that there will be an impact on the setting of these structures (*Jon Berry, Cadw, pers comm*). Therefore, the impact on the Historical resource is **negligible**.

Grid Connection

- 21.5.1.6 The cable connection route options pass through an area of sandy foreshore deposits, some of which appear to have formed in the very recent past through sedimentation, probably due to the construction of the dock piers in the 19th and 20th centuries. From the landfall of the cable at the high water mark to where it either joins Fabian Way or passes through Crymlyn Burrows SSSI, there has been much 20th century development and any archaeological remains of significance in this location are unlikely to survive due to modern disturbance. As the cable trench is not expected to be very deep the potential to impact archaeological remains along this section is low
- 21.5.1.7 One of the potential cable route options lies within the southern verge of Fabian Way. The road, which was constructed in the 1940s, was almost certainly elevated by one to two metres throughout the extent of the cable run and the archaeological potential of this central section of the proposed cable route option is low.

- 21.5.1.8 If the cable route runs through Crymlyn Burrows SSSI, there may be potential for the area to contain archaeological remains at a depth relating to former marine environments. This has been considered in greater detail in Chapter 20: Cultural Heritage: Marine Archaeology. Relevant to the cable route, Chapter 20 identifies that there appears to be some potential for maritime remains, comprising ships or boats dating to the medieval period to be present, due to the foundation of a settlement of Swansea, and contemporary examples of shipping along the south Wales coast. However, due to the location of the coastline this potential may be somewhat limited to wreck sites, with any extant deliberately beached boats likely to be in the Crymlyn Burrows area, and thus beyond the Project site.
- 21.5.1.9 Consequently, it is very likely that any remains associated with former marine environments will be located at sufficient depth for the cable trench not to cause any impact. The potential for archaeological remains in the Crymlyn Burrows area of the proposed cable route option is considered to be low.
- 21.5.1.10 Where the cable route diverges in a south easterly direction across Crymlyn Burrows, the assessment records evidence for a Jersey Marine airfield in the 1930s and WWII military installations during the 1940s further to the north. However, aerial photographic evidence suggests that the extent of the WWII remains were limited to an area sufficiently distant from the Project for there not to be an impact. However, it is possible that further WWII military activity took place in the location of the proposed cable trench options and the potential for archaeological remains pertaining to this are low to medium. The 1920s-1930s airfield was located on Crymlyn Burrows to the north of the Project, but its exact location is not currently known. The airfield is not thought to have been a surfaced runway, and a linear feature shown on the 1937-1947 OS maps possibly represents this feature. The potential for remains relating to the former airfield is low.
- 21.5.1.11 As the cable route options approach the River Neath, on both the western and eastern sides there is little archaeological evidence, presumably due to the dangers associated with the river at this point. Even as early as the Norman period, the crossing at Briton Ferry was known to be treacherous due to sandbanks and strong currents (Morgan 1977). Limited and small scale industrial activity has taken place further away from the river and on the western side, a coal drift to the north of the route options and abandoned tunnel workings of 19th century date to the south were once present. Further tunnel workings were also present on the eastern side of the river, and additional upstream major industrial activity took place with iron and copper works. The potential for archaeological remains in this area is low.
- 21.5.1.12 Having crossed the River Neath, the final section of the route crosses Baglan Bay to link to a substation at the site of Baglan Bay Power Station, an area not previously developed until the mid- to late 20th century. The sandy deposits and the topographically isolated location suggests that the area was little used in the past and any archaeological remains would have been restricted to temporary activities that would have probably left few traces. It is likely that extensive development during the later 20th century will have removed any potential remains that may have existed. This is apparent on an aerial photograph from 1970 (Plate 18, Appendix 21, Volume 3). The HER records the existence of an early 20th century rifle practice range in this approximate location, but it is unlikely that any remains of this exist. Research has shown that peat deposits may be present at depth in this area, but the cable trench is not expected to be deep enough to disturb any potential palaeoenvironmental remains of significance. The potential for archaeological remains to be present in the Baglan Bay section is low.

- 21.5.1.13 In conclusion, ground works for the construction of the cable trench connection between Baglan Bay and Queens Dock may traverse areas of previously undisturbed ground (Crymlyn Burrows). These areas have been assessed as having a low level of archaeological importance, with the magnitude of impact considered to be low. Therefore, the impact on the Historical resource is **negligible**.

Mitigation measures and residual impacts

- 21.5.1.14 As identified previously, construction works may disturb structures associated with the crew station of the gun emplacement. Proposed mitigation of impact will be in the form of a series of small evaluation trenches and the recording of any structural remains revealed below ground. In the context of proposed mitigation, the Project is judged to have a **minor** impact on the gun emplacement.
- 21.5.1.15 A level 2 building recording exercise on the light on the eastern breakwater is proposed in order to mitigate its loss, resulting in a **moderate** residual impact. It is also recommended that the structure be retained intact, if possible, with a view to relocation at a later date. If this option, which will be considered during the detailed design stage, is implemented, then the residual effect would be reduced to **minor**.
- 21.5.1.16 Prior to the relocation of any other WWII structures including the tank cubes or collapsed pill box, any remains will be recorded. Where the route of the cable runs through previously undisturbed ground, an archaeological watching brief will be undertaken during the construction works. In the context of proposed mitigation, the Project is judged to have a **negligible** impact on these aspects of the cultural heritage resource.
- 21.5.1.17 All evaluation trenches, archaeological watching briefs and recording of remains will be subject to agreement of a written scheme of investigation to be approved by GGAT and Cadw.
- 21.5.1.18 With the implementation of these mitigation measures, the residual impact of the Project on the cultural heritage: terrestrial archaeology resources is considered to be minor.

Table 21.5 Cultural heritage environmental effects

Site No.	Description	Significance /Value	Impacts from all stages of project	Magnitude of impact	Mitigation	Significance of residual effect
4100100	FABIAN WAY	Low	The excavation of the cable trench within the verge and embankment of Fabian Way will not impact any horizons of archaeological potential.	Minimal	No mitigation measures are proposed due to the modern date of this asset. Ground works will be entirely within made ground of modern date.	Negligible
415579	JERSEY MARINE AIRFIELD	Low	The excavation of the cable trench through a short section of Crymlyn Burrows may impact remains relating to the former airfield.	Low	Proposed cable alignment will predominantly follow existing disturbed routes. However there may be very localised impact of archaeological; remains if present and an archaeological watching brief should be undertaken in areas of potential to be defined in written scheme of investigation.	Negligible
	PALAEOENVIRONMENTAL REMAINS	Low	Potential impact from cable trench ground works across Crymlyn Burrows.	Low	Proposed cable alignment will predominantly follow existing disturbed routes. However there may be very localised impact of palaeoenvironmental remains if present and an archaeological watching brief should be undertaken in areas of potential to be defined in written scheme of investigation	Negligible
270419	TANK CUBES (4)	HIGH	Current Application to Schedule No direct impact to two in situ , remaining two may be moved subject to Cadw approval	Minimal if two not in situ are be moved otherwise Negligible	If possible, two in situ examples should be retained in current position. Recording if to be moved.	Minor
270416	PILLBOX	High	Current Application to Schedule No direct impact	Negligible	None	Negligible
270417	PILLBOX	High	Current Application to Schedule No direct impact	Negligible	None	Negligible
270418	PILLBOX	High	Current Application to Schedule No direct impact	Negligible	None	Negligible
	GUN EMPLACEMENT (Q4)	High	Current Application to Schedule. No direct impact.	Minimal	Archaeological evaluation of immediate environs of gun emplacement to determine presence of ancillary structures.	Negligible
308200	East Pier Harbour Light	Low	Removal of the light structure prior to removal of Port's eastern breakwater	Major	Level 2 building recording prior to removal. Retained intact if possible with a view to relocating at a later date.	Moderate for Level 2 building recording; or: Minor for Level 2 building recording, removal and appropriate relocation.

21.5.2 Operation and decommissioning of the Project

Operation

- 21.5.2.1 There will be **negligible** effects on terrestrial archaeological resources once the Project becomes operational. No designated assets within 15km of the Project will be significantly affected by the terrestrial aspects of the Project.

Decommissioning

- 21.5.2.2 In terms of decommissioning, as identified in Chapter 4, Project Description, there are two potential options under consideration which vary in terms of physical intervention. The decommissioning options are:
- At the end of the working life of the facility, the turbines and sluice gates could be removed, and the tide allowed to flow through the resultant gaps in the structure.
 - It is also possible that at the nominal end of the anticipated operational life of this facility (some 120 years), power generation by tidal lagoons will have further developed, and the Swansea Bay tidal lagoon will be progressively updated so that the facility can be kept in use as an energy source as well as its ongoing leisure use.
- 21.5.2.3 The potential impacts of decommissioning of the Project on the terrestrial cultural heritage resource are judged to be **negligible**.

21.6 Cumulative and in-combination assessment

- 21.6.0.1 This ES also considers other developments in the area that could, alongside the Project, cause cumulative effects on the local cultural heritage and archaeology. The list of other projects to be considered were identified during the scoping stage of the EIA and this is discussed further in Chapter 2. A preliminary screening of these developments has been undertaken and the results are presented in Table 21.6.
- 21.6.0.2 While the cumulative impact of the other developments may be, on balance, minor or moderate adverse in their own right, the proposed terrestrial development is currently considered likely to have a **negligible** impact on terrestrial cultural heritage assets in the area and therefore would not require the assessment of the other projects in their own right.

Table 21.6 Cumulative impacts to be assessed

Project and location	Current Status	Preliminary Screening
Swansea University Bay Campus, adjacent to Crymlyn Burrows	Construction Feb 2013 – Sept 2015	Works will be completed. No cumulative impact anticipated.
St Modwens land development - east of Swansea Docks, to west of Neath estuary.	Remediation of land, and potential future developments – no details available	No cumulative impact anticipated.
Mumbles pier, foreshore and coastal strip redevelopment	Due to be completed by the end of 2013	Works will be completed. No cumulative impact anticipated.
Construction of new RNLI Lifeboat Station, Mumbles	Expected completion 2014	Works will be completed. No cumulative impact anticipated.
SA1 development, Swansea	Development currently taking place, completion date unknown	Works will be completed. No cumulative impact anticipated.
Construction of the southern access road to Coed Darcy Urban Village, crossing nearby Crymlyn Bog	Yet to commence.	Works will be completed. No cumulative impact anticipated.
Swansea Boulevard project – work between Princess way and The Strand, and the River Tawe bridges and The Strand.	Phase to be complete in November 2013. Phase 2 to start 2014.	Works distant. No cumulative impact anticipated.
Wind turbine – on Welsh water site on Fabian Way	Application- Unsuccessful 25/10/2013	Not considered
Five wind turbines – at Mynydd Marchywel between Rhos and Cilfrew Neath	Submitted Jan 2012. Consultation finished Jan 2013. Still in planning.	Works distant. No cumulative impact anticipated.
Sixteen wind turbines – at Mynydd Y Gwair, Swansea	Approved – unknown construction timetable	Works distant. No cumulative impact anticipated.
Five wind turbines – on land at Mynydd Brombil Farm, Margam Port Talbot	Submitted June 2012, still in planning. Consultation finishes April 2013	Works distant. No cumulative impact anticipated.
Atlantic Array Wind Farm – off North Devon Coast approx 35km distant	DCO application submitted but withdrawn in November 2013.	Not considered.
Seventy six turbine Pen y Cymoedd windfarm near Neath.	Planning approved – construction 2014	Works distant. No cumulative impact anticipated.
Llynfi Afan Renewable Energy Park -15 turbine windfarm – on land 500m southwest of Cynnonville Port Talbot	Planning permission refused. Application was allowed on appeal 27/08/2013.	Works distant. No cumulative impact anticipated.
Mynydd y Betws- fifteen turbine windfarm located on land to the east of Ammanford in Carmarthenshire	Granted planning consent 2009. Started operating April 2013.	Works distant. No cumulative impact anticipated.
Mynydd y Gwrhyd- windfarm in the Upper Amman and Swansea valleys	Approved on appeal 07/05/2009	Works distant. No cumulative impact anticipated.
Swansea Port single wind turbine	Operational	Works completed. No cumulative impact anticipated.
Newlands Farm, single windturbine- Margam	Application submitted January 2013	No cumulative impact anticipated.
Kenfig Industrial Estate single wind turbine	Application submitted. Expected decision by Feb 2014.	Works distant. No cumulative impact anticipated.
Port Talbot Harbour redevelopment	Potential activities/development. Status future unknown.	Works distant. No cumulative impact anticipated.
Upgrading of the existing coastal defence of Aberavon West Promenade, Sandfields, Port Talbot	Completed August 2013	Works distant. No cumulative impact anticipated.
Porthcawl regeneration scheme includes Porthcawl Marina project and 19 th century lighthouse restoration.	Approved by BCBC – timescale unknown.	Works distant. No cumulative impact anticipated.
Tata steel works – Internal power generation enhancement for Port Talbot steel works – installation of two new boilers and two new turbines housed in new power station building	Application expected to be submitted 2014.	Works distant. No cumulative impact anticipated.

Project and location	Current Status	Preliminary Screening
Underground coal gasification under Swansea Bay	License potentially to be extended	Marine works. No cumulative impact anticipated.
Underground coal gasification under Llanelli	Conditional licence issued	Works distant. No cumulative impact anticipated.
Navigational dredging along the Swansea (Tawe), Neath and Port Talbot Channels.	On-going	Marine works. No cumulative impact anticipated.
Marine dredging- Monkston cruising and sailing club and Swansea Marina	On-going maintenance as required	Marine works. No cumulative impact anticipated.
Mumbles Oyster project: Plan to put 10,000 oysters on seabed off the village of Oystermouth	Permission granted September 2013	Marine works. No cumulative impact anticipated.
Severn Barrage	Not within foreseeable future.	Not considered. See note in Chapter 2.
Swansea Barrage	Operational	Operational. No cumulative impact anticipated.
Cardiff Barrage	Operational	Operational. No cumulative impact anticipated.
Baglan Power Station	Operational	Operational. No cumulative impact anticipated.
Prenergy Biomass Power Station, Port Talbot. 350MW wood chip fuelled thermal generating station	Granted condition approval by BERR on the 20 November 2007. While large scale construction has not been begun, a lawful start of development has occurred and as such the planning permission remains extant.	Works distant. No cumulative impact anticipated.
Abernedd Power Station was granted conditional approval by DECC on the 23 rd Feb 2011 for construction of a 870MW gas fired combined cycle gas turbine power plant	No lawful start has yet been made to this development	Works distant. No cumulative impact anticipated.
Nobel banks aggregate extraction site	Ongoing	Works distant. No cumulative impact anticipated.
The Swansea Bay (Thomas Shellfish Limited) Mussel Fishery Order	Ongoing	No cumulative impact anticipated.
Ro-Ro Ferry, Swansea Port	Currently not operational	Not considered
Rhiannon Offshore Windfarm	Pre-application stage	Works distant. No cumulative impact anticipated.
Burbo Bank Offshore Windfarm extension	Existing and extension sought 2013	Works distant. No cumulative impact anticipated.

21.7 Conclusion

- 21.7.0.1 This Chapter assesses the potential effects of the construction, operation and decommissioning of the Project on the terrestrial archaeological resource. There are four built structures of WW II date located along the sea wall of Queens Dock which are considered to be of high significance. Elsewhere, the significance of the archaeological resource is considered to be low.
- 21.7.0.2 With mitigation, there will be a minor adverse impact on the terrestrial archaeological resource during the construction phase. There will be negligible effects on terrestrial archaeological resources once the Project becomes operational or in the decommissioning phase.
- 21.7.0.3 It is considered that the assessment work undertaken to date, and results from the proposed mitigation measures, will enhance the archaeological record of the region, even if it provides negative evidence for the presence of archaeological remains. This is considered a long-term minor beneficial effect upon understanding of local archaeological resources.

21.8 References

Cadw, 1998, Register of Landscapes of Outstanding Historic Interest in Wales Part 2.1 ISBN 1 85760 007 X

Cadw, 2001, Register of Landscapes of Outstanding Historic Interest in Wales Part 2.2 ISBN 1 85760 187 4)

Cadw 2001 Register of Parks and Gardens of Special Historic Interest (<http://cadw.wales.gov.uk/historicenvironment/protection/historiclandscapes/histparkgrdns>)

English Heritage, 2012, The setting of Heritage Assets

Institute for Archaeologists (IFA) 'Standard and Guidance for archaeological desk-based assessment' (1994, updated 2001, 2008, 2012).

Neath Port Talbot County Borough Council, Unitary Development Plan, March 2008.

Tidal Lagoon Swansea Bay, Scoping Report (2012).
http://infrastructure.planningportal.gov.uk/wp-content/ipc/uploads/projects/EN010049/1.%20Pre-Submission/EIA/Scoping/Scoping%20Request/EN010049_Tidal%20Power%20Swansea%20Bay%20Scoping%20Document%20Final%20reduced%20size.pdf

URS Corporation Ltd 2006 Transit Site and Eastern Pipeline Investigation (44382532 / BRRP0001). Report Prepared for BP Llandarcy Refinery Ltd.

Welsh Government, Planning Policy Wales (Ed. 5, 2012)

Welsh Office Circular 60/96 'Planning and the Historic Environment: Archaeology'.

Welsh Office Circular 61/96 'Planning and the Historic Environment: Historic Buildings and Conservation Areas'.